INTRODUCTION

In 1982, the Mercer Soil and Water Conservation District (SWCD), in cooperation with the USDA, Soil Conservation Service (SCS) took part in the National Resources Inventory (NRI). Information was collected on 193 sample units to provide county reliable resource data. Each unit consisted of 160 acres.

This inventory provided natural resource data on (1) land use, (2) conservation treatment needs, (3) prime farmland, (4) potential cropland, (5) sheet and rill erosion, (6) flood prone areas, (7) wetlands, (8) small bodies of water, and (9) urban buildup.

The study identifies erosion and land management problems in Mercer County. These problems were addressed and priorities set in the District's long-range program. The top priorities are:

1. Erosion control.

2. Improved water quality.

3. Improved drainage.

This publication describes the soil resource base of the county and points out some problems that could reduce future soil productivity. Reduced production will create some economic problems for land users. The primary objective of the Mercer SWCD is to promote, on a voluntary basis, the wise use of the soil resources within the county.

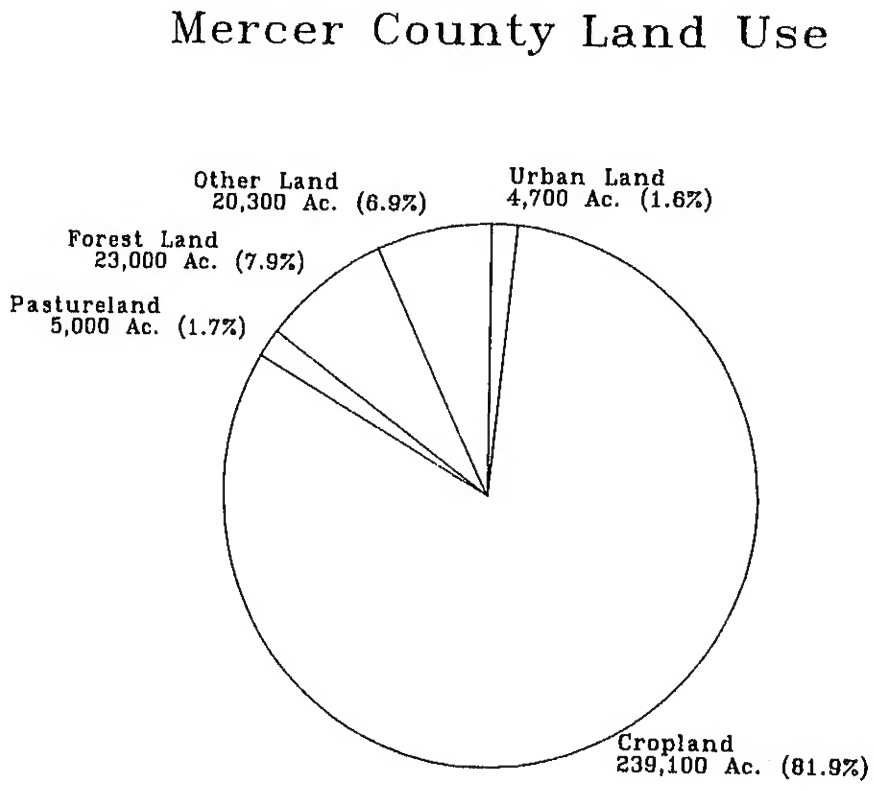
The information in this publication, like all information developed from a statistical study, has varying degrees of reliability or confidence levels. All values expressed here, representing over 10 percent of the county area, have a confidence level greater than 90 percent or they are at least 90 percent accurate. Smaller values, those representing less than 10 percent of the total county area, will be less than 90 percent accurate.

September 1985

Land Use

Land area measurements were made for Mercer County during the 1980 Census by the U.S. Department of Commerce. The 1980 Census lists the total surface area of Mercer County at 302,900 acres. Within this acreage are 10,800 acres of water bodies greater than 40 acres in size. The census also showed that there is no significant acreage of federally owned land.

Figure 1.



TOTAL NONFEDERAL LAND ACREAGE OF MERCER COUNTY = 292,100

Cropland is the largest land use in the county. This fact, plus the large numbers of livestock makes Mercer County the number one agricultural county in the state in gross farm income.

Agriculture is the primary industry and the largest land user in the county. Approximately 96.4 percent of the total land area is in farms. The acreage in urban and rural built-up land is increasing at a steady pace. The present trend is towards fewer farms with larger acreages.

Land Use by Capability Class

Soils can be classified in a number of ways. SCS uses a land capability classification system that groups soils on the basis of their ability to produce common cultivated crops and pasture plants without deterioration. Land capability classes and subclasses in Mercer County are based on the soil survey.

Capability classes are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of agricultural use.

Class III soils have severe limitations that reduce the choice of agricultural use.

Class IV soils have very severe limitations that reduce the choice of plants, or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Each capability class except Class I has subclasses to identify specific limitations. The letter "e" stands for erosion risk; "w" for wetness; and "s" for soils limited mainly because they are shallow, droughty, or stony.

Soils in Classes II, III, IV, and V are represented in Mercer County.

Table 1. Rural Land Use Acreage by Capability Class and Subclass

CLASS AND SUBCLASS	CROPLAND Acres	PASTURELAND Acres	FOREST LAND Acres	OTHER RURAL LAND Acres	TOTAL
IIe	101,800	1,500	7,000	4,900	115,200
IIw	100,400	1,500	8,000	1,400	111,300
IIIe	13,900	1,000	0	2,600	17,500
IIIw	22,500	500	5,500	500	29,000
IVe	500	500	0	0	1,000
V	0	0	2,500	0	2,500
NA	0	0	0	1,800	1,800
TOTAL	239,100	5,000	23,000	11,200	278,300

KEY POINTS:

- Eighty-five percent of the cropland is within soil Capability Class II.
- Eighty-nine percent of the forest land is within soil Capability Classes II and III which has a good potential for conversion to cropland.

Prime Farmland

Prime farmland is one of several kinds of important farmlands defined by the U.S. Department of Agriculture. It is of major importance in providing the Nation's short and long range needs for food and fiber. The majority of land in Mercer County is prime farmland. Prime farmland soils are defined as the soils that are best suited to producing food, fiber, forage, feed, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland is also the easiest and least costly to develop for non-agricultural uses. Significant areas of prime farmland have been irreversibly converted to other uses. Planning to protect the prime farmland should be done at the local county level.

Mercer County has about 241,600 acres of prime farmland with almost all of it in Capability Class II.

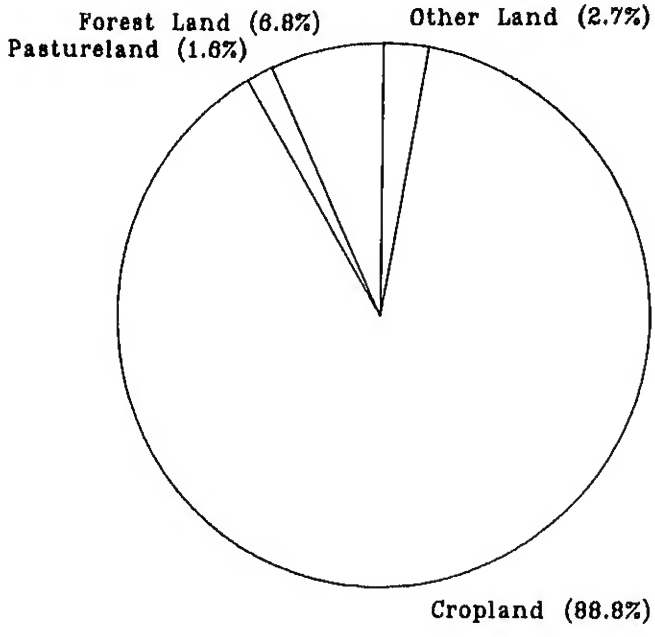
Table 2. Prime Farmland by Rural Land Use

LAND USE	TOTAL ACRES	PRIME FARMLAND	
		Acres	Percent
Cropland	239,100	220,700	92
Pastureland	5,000	4,000	80
Forest Land	23,000	17,000	74
Other Land	11,200	6,800	61
TOTAL	278,300	248,500	89

Figure 2.

Use Of Prime Farmland

Mercer County



KEY POINT:

- Prime farmland makes up 89 percent of all rural land and 92 percent of all cropland.

Soil Erosion

Soil erosion is a natural process that loosens and transports soil particles. Although 89 percent of all rural land is prime farmland, soil erosion is continuously occurring on many acres throughout the county. The rate of erosion varies in direct proportion with the amount of cover on the soil. The most critical erosion generally occurs just after row crops are planted where conventional tillage is used. At this time there is virtually no cover on the soil surface. The falling raindrops strike the soil detaching the soil particles. After detachment the soil particles are easily transported by the runoff water.

Approximately 751 thousand tons of topsoil erode on Mercer County land annually with 97 percent of it occurring on cropland.

Table 3. Annual Soil Erosion by Agricultural Land Use

LAND USE	ACRES	TONS	TONS/ACRE
Cropland	239,100	731,600	3.1
Pastureland	5,000	6,400	1.3
Forest Land	23,000	3,200	0.1
Other Land	9,400	10,100	1.1
TOTAL	276,500	751,300	
AVERAGE			2.7

The average cropland erosion rate of 3.1 tons per acre per year does not seem to be excessive. However, this is an average figure and does not reflect the extreme ends of the scale. Table 4 provides data that shows where erosion is rapidly depleting the soil resource.

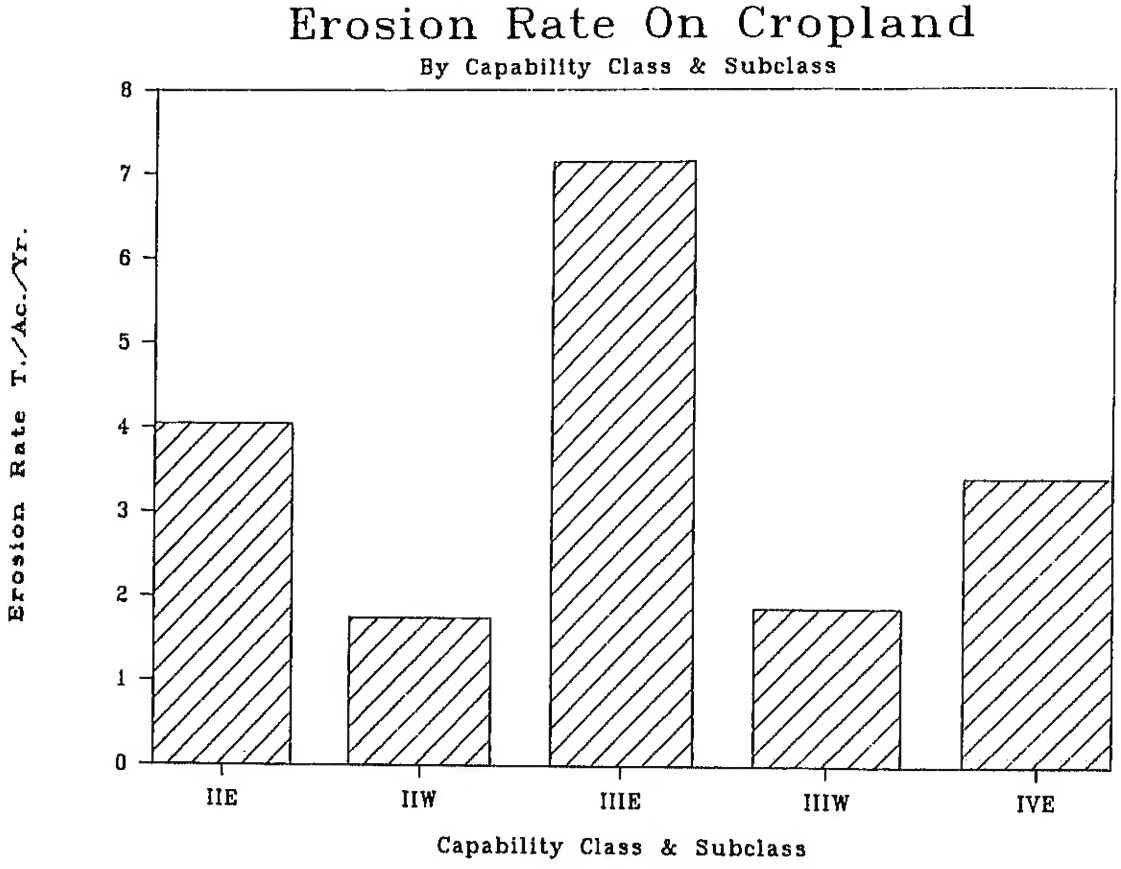
Table 4. Erosion on Cropland by Capability Class and Subclass

CLASS AND SUBCLASS	ACRES	TONS	TONS/ACRE
IIe	101,800	412,400	4.1
IIw	100,400	176,100	1.8
IIIe	13,900	99,300	7.1
IIIw	22,500	42,100	1.9
IVe	500	1,700	3.4
TOTAL	239,100	731,600	
AVERAGE			3.1

KEY POINTS:

- Eighty percent of the total tons of soil loss is taking place on Class II land.

Figure 3.



Soil can tolerate small amounts of erosion and remain productive for agriculture. When erosion is above this tolerable limit, the soil resource base cannot be maintained and the future ability of the soil to produce crops is threatened. The tolerable soil loss ("T") ranges from three to five tons per acre per year, with most of the soils in Mercer County having a "T" of three.

Approximately 77,100 acres of cropland are eroding at rates greater than "T". This represents 32 percent of the cropland in Mercer County. The erosion on these acres represents a serious threat to the productive capacity of the soil resource base. The rate of productivity reduction is a slow but constant process. Increased productivity has been on these soils during the past few decades, but the cost of production has greatly reduced the profit This trend will continue at an accelerated rate if on is not controlled.

Thirty-two percent of all cropland in the county is eroding excessively.

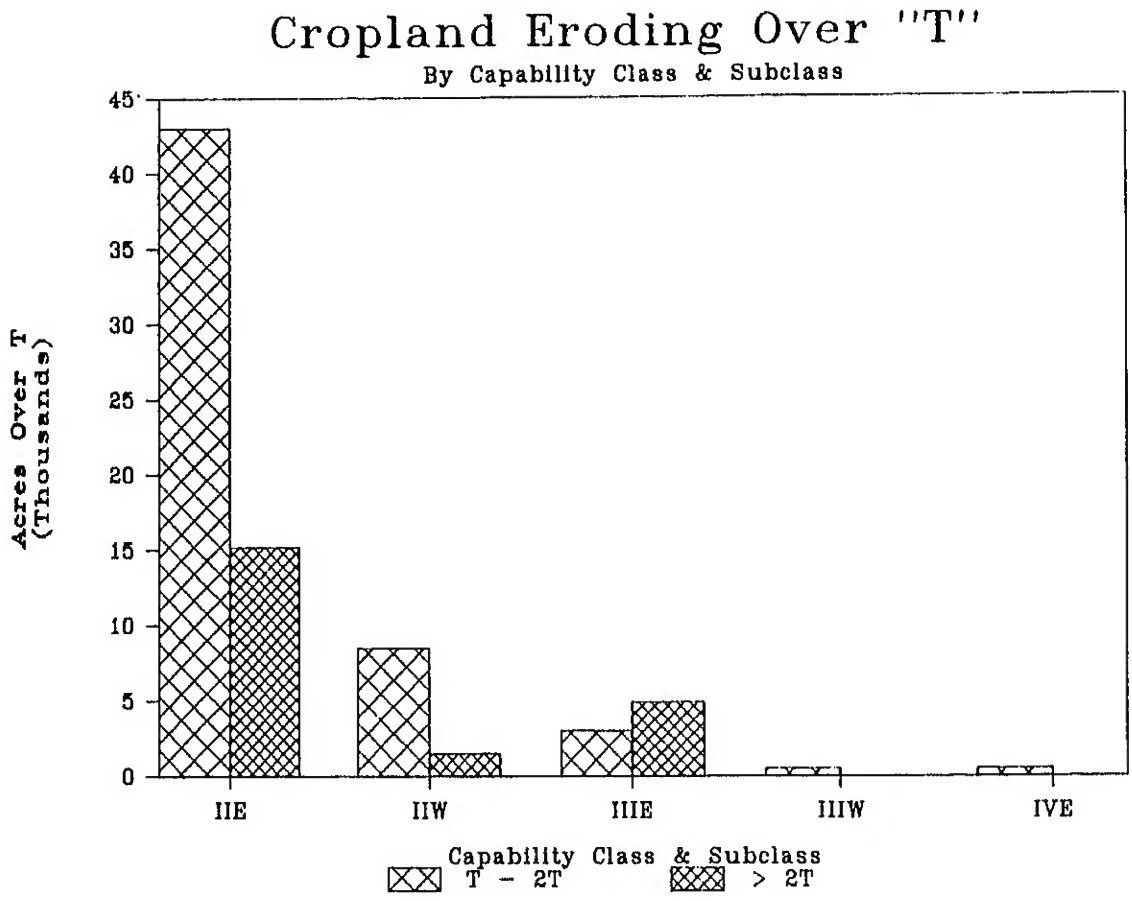
Table 5. Cropland in Relation to "T" by Capability Class and Subclass

CAPABILITY CLASS	TOTAL	LESS THAN "T"	"T" - "2T"	GREATER THAN "2T"
	----------ACRES----------			
IIe	101,800	43,600	43,000	15,200
IIw	100,400	90,400	8,500	1,500
IIIe	13,900	6,000	3,000	4,900
IIIw	22,500	22,000	500	0
IVe	500	0	500	0
TOTAL	239,100	162,000	55,500	21,600

KEY POINTS:

- o Nine percent of all cropland is eroding over "2T".
- o Fifty-seven percent of IIe cropland is eroding over "T".

Figure 4.



Conservation Treatment Needs

Many acres of Mercer County agricultural land need one or more different types of conservation treatment to either protect or improve soil and water resources. The different conservation practices used to accomplish these objectives vary by land use. Cropland treatment usually involves practices like conservation cropping systems, conservation tillage, contour farming, surface and subsurface drainage systems.

Pastureland practices include rotational grazing, pasture management, and planting. These practices may be used to protect or improve the soil, water, and plant resources. Conservation practices on woodland may include timber stand improvement and tree planting. Conservation practices that may be used to improve water quality are animal waste storage and management systems. Land designated as adequately protected is properly managed for production and protected from excessive erosion.

Table 6. Conservation Treatment Needs and Percent by Land Use

LAND USE	TOTAL ACRES	EROSION CONTROL NEEDED	DRAINAGE NEEDED	OTHER TREAT-MENT NEEDED	TOTAL	PERCENT OF TOTAL ACRES NEEDING TREATMENT
Cropland	239,100	83,700	101,700	0	185,400	78
Pastureland	5,000	0	1,000	2,000	3,000	60
Forest Land	23,000	1,000	0	19,500	20,500	89
Other Land	11,200	1,400	1,400	0	2,800	25
TOTAL	278,300	86,100	104,100	21,500	209,700	75

SUMMARY

Any time a resource is used for production, some of that resource will be lost. The concept of conservation is to minimize the amount of resource lost during production. Mercer County is fortunate to have a large soil resource base of highly productive soil. The economic condition and standard of living within the county is due primarily to this productive resource base.

Protection of the soil resource base from soil erosion and changes in land use is necessary if the county is to maintain its agricultural productivity. The responsibility of conserving the soil resource base is dependent on less than 10 percent of the county's population. Although less than 10 percent of the county's population controls the soil resource base, the remaining population is directly or indirectly affected. It is imperative that the total population supports conservation of the resource base.